

TABLE 22

## Foreign R&amp;D paid for by the company and others and performed by the company, by type of R&amp;D, industry, and company size: 2018

(Millions of U.S. dollars)

Industry and company size	NAICS code	Total Foreign R&D performance			Research (basic and applied)			Development		
		Total	Paid for by company	Paid for by others	Total	Paid for by company	Paid for by others	Total	Paid for by company	Paid for by others
All industries	21-23, 31-33, 42-81	100,376	90,429	9,947	19,788	17,520	2,268	80,589	72,909	7,680
Manufacturing industries	31-33	64,878	63,400	1,478	13,594	13,291	303	51,284	50,109	1,175
Food	311	864	862	3	181	181	*	683	681	3 i
Beverage and tobacco products	312	516	516	0	186	186	0	330	330	0
Textile, apparel, and leather products	313-16	216	216	* i	32	32	0	184	184	* i
Wood products	321	3	3	0	1	1	0	1	1	0
Paper	322	80	80	* i	11	11	* i	69	69	* i
Printing and related support activities	323	4	4	0	* i	* i	0	4	4	0
Petroleum and coal products	324	192 - 194	192	0 - 2 i	56 - 59	57	0 - 2 i	136	136	* i
Chemicals	325	16,749	16,459	289	4,590	4,486	104 i	12,159	11,973	185
Basic chemicals	3251	603	601	2	203	201	1	400	400	*
Resin, synthetic rubber, and artificial synthetic fibers and filaments	3252	774 - 792	775	0 - 16	152 - 170	153	0 - 16	622	622	* i
Pesticide, fertilizer, and other agricultural chemicals	3253	328 - 337 i	322 i	6 - 14	82 - 91 i	76 i	6 - 14	246 i	246 i	0
Pharmaceuticals and medicines	3254	13,945	13,679	265	4,004	3,922	81 i	9,941	9,757	184
Soap, cleaning compound, and toilet preparation	3256	847	847	0	97	97	0	750	750	0
Paint, coating, adhesive, and other chemicals	3255, 3259	235 - 252	235	0 - 17 i	36 - 54	37	0 - 16 i	199	198	1 i
Plastics and rubber products	326	428	423	5	115	115	1	313	308	4
Nonmetallic mineral products	327	181 i	181 i	0	24 i	24 i	0	157 i	157 i	0
Primary metals	331	151	150	1	6	5	*	145 i	145 i	*
Fabricated metal products	332	216	204	12	66	64	2 i	150	140	11 i
Machinery	333	4,521	4,432	89	722	709	13	3,798	3,723	75
Agricultural implement	33311	858	855	3	258	257	1	601	599	2
Semiconductor machinery	333242	911	898	13	76	74	2 i	835	824	11 i
Engine, turbine, and power transmission equipment	3336	935 - 958	936	0 - 21	0 - 390 i	0 - 380 i	0 - 12	556 - 958 i	556 - 937 i	0 - 21
Other machinery	other 333	1,793 - 1,817	1,743	51 - 74	0 - 390	0 - 380	0 - 12	1,404 - 1,807	1,363 - 1,744	40 - 64
Computer and electronic products	334	28,322	27,744	578	5,084 i	4,970 i	115 i	23,238	22,775	463
Communications equipment	3342	3,376	3,369	7	533	533	* i	2,843	2,836	7
Semiconductor and other electronic components	3344	14,487	14,263	224	2,266 i	2,253 i	14	12,221 i	12,010 i	210
Navigational, measuring, electromedical, and control instruments	3345	4,172	3,843	329	1,065	966	99 i	3,107	2,877	230
Electromedical, electrotherapeutic, and irradiation apparatus	334510, 334517	1,169 i	1,166 i	3	183 i	183 i	* i	986 i	983 i	3

TABLE 22

## Foreign R&amp;D paid for by the company and others and performed by the company, by type of R&amp;D, industry, and company size: 2018

(Millions of U.S. dollars)

Industry and company size	NAICS code	Total Foreign R&D performance			Research (basic and applied)			Development		
		Total	Paid for by company	Paid for by others	Total	Paid for by company	Paid for by others	Total	Paid for by company	Paid for by others
Search, detection, navigation, guidance, aeronautical, and nautical system and instrument	334511	1,154	858	296	414	331	83	740	527	213
Other measuring and controlling device	other 3345	1,849	1,819	30	467	451	16	1,381	1,368	14
Other computer and electronic products	other 334	6,287	6,269	18	1,220	1,219	2	5,067	5,051	16
Electrical equipment, appliances, and components	335	1,693	1,687	6	259	257	1	1,434	1,430	4
Transportation equipment	336	7,446	6,990	457	1,797	1,736	61	5,649	5,254	395
Motor vehicles, bodies, trailers, and parts	3361-63	6,540	6,206	334	1,475	1,451	24	5,065	4,755	310
Aerospace products and parts	3364	686 - 711	599	87 - 111	229 - 254	224	5 - 30	457	375	81
Aircraft, aircraft engine, and aircraft parts	336411-13	685 - 710	599	87 - 111	229 - 254	224	5 - 30	456	375	81
Guided missile, space vehicle, and related parts	336414-15, 336419	1	1	0	*	*	0	*	*	0
Military armored vehicle, tank, and tank component	336992	0	0	0	0	0	0	0	0	0
Other transportation	other 336	195 - 221	184	11 - 36	67 - 93	61	7 - 33	128	124	4
Furniture and related products	337	25	23	2	8	8	*	17	16	1
Miscellaneous	339	3,270 - 3,274	3,234	36 - 40	454 - 458	449	5 - 9	2,816	2,785	31
Medical equipment and supplies	3391	2,884	2,847	37	393	387	6	2,492	2,461	31
Other miscellaneous manufacturing	3399	386 - 390	386	0 - 4	61 - 66	62	0 - 3	324	324	*
Nonmanufacturing industries	21-23, 42-81	35,498	27,029	8,469	6,194	4,230	1,964	29,304	22,800	6,505
Mining, quarrying, oil and gas extraction, and support activities	21	163	161	1	12	12	*	150	149	1
Utilities	22	8	8	0	0 - 9	0 - 9	0	0 - 9	0 - 9	0
Wholesale trade	42	32	32	0	1	1	0	32	32	0
Electronic shopping and electronic auctions	454111-12	63 - 3,864	63 - 3,864	0	4 - 1,585	4 - 1,585	0	0 - 2,304	0 - 2,304	0
Transportation and warehousing	48-49	14	14	0	0 - 15	0 - 15	0	0 - 15	0 - 15	0
Information	51	17,156	17,125	31	1,634	1,628	6	15,522	15,497	25
Publishing	511	7,195	7,182	13	1,124	1,121	3	6,071	6,061	10
Newspaper, periodical, book, and directory publishers	5111	19	19	0	0	0	0	19	19	0
Software publishers	5112	7,175	7,162	13	1,124	1,121	3	6,052	6,042	10
Telecommunications	517	131 - 138	132	0 - 5	37	37	0	94 - 101	95	0 - 5
Data processing, hosting, and related services	518	4,739	4,725	14	260	257	3	4,479	4,468	11
Other information	other 51	5,086 - 5,092	5,086	0 - 5	214	214	*	4,872 - 4,878	4,873	0 - 5

TABLE 22

## Foreign R&amp;D paid for by the company and others and performed by the company, by type of R&amp;D, industry, and company size: 2018

(Millions of U.S. dollars)

Industry and company size	NAICS code	Total Foreign R&D performance			Research (basic and applied)			Development		
		Total	Paid for by company	Paid for by others	Total	Paid for by company	Paid for by others	Total	Paid for by company	Paid for by others
Finance and insurance	52	885	885	0	66	66	0	819	819	0
Real estate and rental and leasing	53	51	51	0	22	22	0	29	29	0
Lessors of nonfinancial intangible assets (except copyrighted works)	533	0	0	0	0	0	0	0	0	0
Other real estate and rental and leasing	other 53	51	51	0	22	22	0	29	29	0
Professional, scientific, and technical services	54	13,307	4,873	8,435	2,872	914	1,958	10,435	3,958	6,477
Architectural, engineering, and related services	5413	56 - 66	26	30 - 39	7 - 17	4	3 - 13	49	22	27
Computer systems design and related services	5415	4,364	4,301	63	797	738	59	3,567	3,563	4
Scientific research and development services	5417	8,370 - 8,379	63	8,307 - 8,316	1,886 - 1,897	12	1,875 - 1,884	6,483	51	6,432
Research and development in biotechnology	541711	2,590	34	2,556	323	2	320	2,267	32	2,235
Research and development in the physical, engineering, and life sciences (except biotechnology)	541712	5,778	28	5,750	1,564	9	1,554	4,215	19	4,196
Research and development in the social sciences and humanities	541720	1 - 12	1	0 - 10	0 - 11	*	0 - 10	1	1	0
Other professional, scientific, and technical services	other 54	507	482	25	171	161	10	336	321	15
Health care services	621-23	22	20	2	5	5	0	16	14	2
Other nonmanufacturing	23, 44-45 (excluding 454111-12), 55-56, 624, 71-72, 81	0 - 3,801	0 - 3,801	0	0 - 1,581	0 - 1,581	0	0 - 2,304	0 - 2,304	0
All companies (number of domestic employees)	-	100,376	90,429	9,947	19,788	17,520	2,268	80,589	72,909	7,680
Small companies										
10-19 <sup>a</sup>	-	128	121	6	31	30	*	97	91	6
20-49	-	569	557	12	99	96	3	470	461	9
Medium companies										
50-99	-	692	657	35	59	57	1	633	600	33
100-249	-	1,872	1,698	174	341	307	34	1,531	1,391	140
Large companies										
250-499	-	2,179	2,135	44	388	374	14	1,791	1,761	30
500-999	-	2,557	2,149	408	930	557	373	1,627	1,591	35
1,000-4,999	-	15,184	14,893	291	3,216	3,024	192	11,968	11,869	99
5,000-9,999	-	15,538	10,033	5,505	3,238	2,173	1,065	12,300	7,860	4,440
10,000-24,999	-	22,356	20,846	1,511	3,497	3,401	96	18,860	17,445	1,415
25,000 or more	-	39,301	37,339	1,961	7,988	7,499	489	31,313	29,840	1,473

\* = amount < \$500,000; i = > 50% of the estimate is a combination of imputation and reweighting to account for nonresponse.

NAICS = 2012 North American Industry Classification System.

<sup>a</sup> Business Research and Development Survey does not include companies with fewer than 10 domestic employees.

**Note(s):**

Detail may not add to total because of rounding. Industry classification is based on the dominant business code for domestic R&D performance, where available. For companies that did not report business codes, the classification used for sampling was assigned. Beginning in survey year 2018, statistics are representative of companies located in the United States that performed or funded \$50,000 or more of R&D. This change has affected the comparability of these estimates with estimates published for years prior to 2018. An estimate range may be displayed in place of a single estimate to avoid disclosing operations of individual companies.

**Source(s):**

National Center for Science and Engineering Statistics and U.S. Census Bureau, Business Research and Development Survey, 2018.